

1 REMARKS

2 *Information Disclosure Statement*

3 In Paragraph 6 of the Detailed Action, the reference from the *CRC Handbook of*
4 *Chemistry* was not considered because all the pages mentioned in the Information Disclosure
5 Statement were not submitted. Accompanying this Response are all the pages 10-181
6 through 10-198. We request that this reference, which contains the data on which Fig. 2 of
7 the application is based, be considered.

8

9 *Specification*

10 Paragraph 7 lists a number of informalities in the Specifications. The Specifications
11 have been amended as follows to cure these informalities.

12 Paragraph [0004]. The last line of this paragraph has been amended so that the status
13 of U.S. Application Serial No. 10/121,390 has been changed from co-pending to abandoned.

14 Paragraph [0006]. The Specifications contained two sets of numbered superscripts;
15 one referred to the footnotes for Table 1 and the other referred to cited references in the
16 Information Disclosure Statement. The footnotes for Table 1 have been changed to letters (a
17 through e) from numbers (1 through 5) to remove this source of confusion. The equation in
18 the first footnote for the meaning of Electricity Consumption was found to be confusing. It
19 has been changed to:

20 Electricity consumption= (Electrical power input)/(Electrical power input+ LHV of
21 input fuel).

22 Paragraph [0007]. The reference for USDOE¹ (Hydrogen Production and Delivery
23 Research Solicitation No. DE-PS36-03GO93007, July 24, 2003, pages 2, c-7) from the
24 Information Disclosure Statement has been added to the paragraph.

25 Paragraph [0009]. The reference for Spindt² (A Thin-Film Field Emission Cathode, J.
26 Of Applied Physics, 39, 1968, pp. 3504-3505) has been added from the Information
27 Disclosure Statement.

28 Paragraph [0011]. There was a mistake in the next to last sentence of the paragraph
29 that obscured its meaning. The sentence has been changed as follows: "The presence of H₂O

1 results [[causes]] in chemical reactions wherein carbon dioxide rather than carbon or soot is
2 formed.”

3 Paragraph [0015]. Spurious commas and periods have been deleted. “electrode(s)”
4 has been replaced by “electrodes.” Also, the paragraph has been rewritten slightly to
5 hopefully clarify matters of single and multiple electrodes and circuits.

6 Paragraph [0017]. A reference that had been disallowed for incompleteness has been
7 added for Fig. 2 (Lias, Sharon G., Ionization Energies of Gas Phase Molecules, CRC
8 Handbook Chemistry and Physics, 83rd Ed., pages 10-181 to 10-198)³ As discussed earlier,
9 the complete reference accompanies this Response.

10 Paragraph [0023]. The sentence extending from page 9, line 3 through line 7 has
11 been amended to replace semicolons with commas and to delete a spurious comma.
12

13 *Drawings*

14 In Paragraph 8 of the Detailed Action, the drawings are objected to because Fig. 1
15 includes a reference character for a center axis line of the reactor that is not mentioned in the
16 description in the Specifications. Either corrected drawings or adding the reference character
17 to the description is required to avoid abandonment. The description has been amended in
18 Paragraph [0015] in the sentence on the last line of 5 and the first line of page 6 by adding at
19 the end of the sentence the clause “which surrounds the center line C ₁ of the reformer.”
20

21 *Claim Rejection - 35 U.S.C. §112*

22 In Paragraphs 9 through 11 of the Detailed Action, Claims 4-13 are rejected under 35
23 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and
24 distinctly claim the subject matter which the applicant regards as the invention. The basis for
25 this rejection is that Claims 4 and 7 contain improper Markush groups. Apparently Claims 5
26 and 6, and Claims 8 through 11 are rejected because they are dependent on Claims 4 and 7.
27 The Markush groups have been amended to put them proper form as outlined in Paragraph
28 11. Putting the Markush groups traverses this basis for rejection of Claims 4 through 11.

29 Claims 12 and 13 are not dependent on Claim 4 or on Claim 7. Therefore,
30 Paragraphs 9 through 11 do not give the basis for Claims 12 and 13 to be rejected under 35

1 U.S.C. 112. However, Claim 12 is somewhat ambiguous as to the relationship between
2 electrodes, circuits, and electrical sources. It is rewritten to indicate that each circuit may be
3 connected to a separate electricity source, as is stated on lines 26 and 27 of page 5 of the
4 application. Amendment of Claim 13 is discussed under the rubric of Manner of Operating
5 Apparatus.

6

7 ***Manner of Operating Apparatus***

8 The Detailed Action on page 11 and elsewhere notes that expressions relating to a
9 manner of operating the disclosed reformer are of no significance in determining
10 patentability of an apparatus claim. Therefore, several claims have been amended to remove
11 such language.

12 In the last element in Claim 1, “means for introducing gaseous material in a flow” is
13 replaced by – ingress means – and “removing a reformate stream” is replaced by – egress
14 means –. The same replacements are made in Claim 13.

15 The Detailed Action also indicates that Claims 5, 10 and 11 have such language. It
16 appears that the offending expression is “ion neutralizing”. To address this defect, “ion
17 neutralizing” has been replaced by –ion-neutralization–. “Ion-neutralization” is an adjective
18 modifying filter. “Ion-neutralization filter” should be a valid expression in an apparatus
19 claim such as “oil filter” or “high efficiency particulate air (HEPA) filter” is.

20 Also, Claim 9 is amended to remove the expression “having a great capacity of
21 absorbing thermal compression-expansion, shocks and vibrations and having the ability of
22 sealing and protecting reformer material.”

23

24 ***Claim Rejection - 35 U.S.C. §103***

25 In the Detailed Action, claims are rejected under 35 U.S.C. 103 in Paragraph 13, a
26 first Paragraph 10 beginning on page 7 (“Paragraph 10-7”), a second Paragraph 10 beginning
27 on page 9 (“Paragraph 10-9”), and a third Paragraph 10 beginning on page 10 (“Paragraph
28 10-10”). Relevant to rejection of claims under 35 U.S.C. 103 are an amendment to Claim 1
29 and addition of Claim 18. The limitation that an ion-neutralization filter surrounds the
30 collector electrode means is added to Claim 1. This limitation was previously Claim 5, and

1 consequently Claim 5 is cancelled. New Claim 18 provides that the temperature range in the
2 reaction chamber is 400°C to 1900°C. In the specifications as filed, this temperature range
3 is found in line 4 of page 7.

4

5 **Rejection of Claims 1 and 12-13**

6 Rejection of Claim 1. In Paragraph 13 of the Detailed Action, Claims 1 and 12-13
7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (USP 5,614,156) in
8 view of Kieser et al. (USP 5,746,051) and further in view of Sakurai et al. (USP 5,744,104).
9 As amended Claim 1 has the ion-neutralization filter limitation from Claim 5, Paragraph 10-
10 7 as it applies to Claim 5 is also relevant.

11 Paragraph 2143.03 of the MPEP, page 2100-133 (May 2004) provides that to
12 establish *prima facie* obviousness of a claimed invention, all the claim limitations must be
13 taught or suggested by the prior art. All words in a claim must be considered in judging the
14 patentability of that claim against the prior art. If an independent claim is nonobvious under
15 35 U.S.C., then any claim dependent therefrom is nonobvious. Applicant believes that three
16 elements of independent Claim 1, as amended, are neither taught or suggested by the prior
17 art. The first element is that the reaction chamber has emitter electrode means attached
18 impervious ceramic wall laterally bounding it, has an inner lateral wall containing collector
19 walls, and has an electric circuit maintained between the emitter electrode means and the
20 collector electrode means. The second element is the ion-neutralization filter surrounding
21 the collector electrode means. The third element is the compression-expansion cushion mat
22 material surrounding the low thermal conductivity material.

23 The Detailed Action states in the first paragraph of page 6, Wang (156) does not
24 disclose means for generating plasma comprising emitter electrode means attached to the
25 first ceramic wall, an inner lateral wall containing collector electrode means, and an electric
26 circuit maintained between the emitter electrode means and the collector electrode means. It
27 therefore relies on Kieser et al to teach or suggest this limitation. On page 6, second
28 paragraph, the Detailed Action characterized the device taught by Kieser et al. as disclosed in
29 Fig. 1 as follows: "Kieser et al teach effective means for generating plasma in a reactor used
30 for destruction of volatile pollutants comprising emitter electrode means attached to the wall

1 laterally bounding the reaction chamber, an inner lateral wall containing collector electrode
2 means, and an electric circuit maintained between the emitter electrode means and the
3 collector electrode means.” The Applicant earnestly contends that this description of the
4 device taught by Kieser et al. in Fig. 1 is inaccurate. Kieser et al. in C2/L50-67 describe the
5 discharge vessel 60 shown in Fig. 1 as containing an even number of flat rectangular
6 electrodes 62 and the same number less one of flat rectangular insulating plates 64, with
7 alternating electrodes and insulating plates, with adjacent electrodes having opposite
8 polarity, and with electrodes adjacent to the discharge vessel. The vessel taught by Kieser et
9 al. does not have an inner lateral wall for collector electrodes to be attached to; rather it has
10 an interior filled with alternating electrode plates and insulating plates and no inner wall. In
11 contrast, interior of the reaction chamber (i.e., the space between the outer lateral wall and
12 attached emitter electrodes and the inner lateral wall and attached electrodes) and except for
13 the ion-neutralization filter, contains only plasma in the instant claims. Kieser et al. (C1/15-
14 117) describe their device as operating according with the principle of dielectrically inhibited
15 discharges (or “silent discharges”), which requires dielectric layers between electrodes
16 (Kieser et al C3/L26-L37 appears to be concerned about flashover discharges). Flashover
17 discharges are irrelevant in the instant invention. Their device is used to detoxify exhaust
18 fumes from mobile equipment. The instant invention has a completely different use; namely
19 to dissociate H₂O and hydrocarbons. The principle upon which the instant invention operates
20 is described in Paragraphs [0015] through [0019]. It is a completely different principle than
the principle of dielectrically inhibited discharges.

21
22 Page 6 of the Detailed Action states “As instant specification is silent to unexpected
23 results, it would have been obvious to one of ordinary skills in the art at the time of the
24 invention to substitute the plasma generating means of Wang with plasma generating means
25 of Kieser et al, because doing so would amount to nothing more than a use of a known
26 apparatus for its intended use in a known environment to accomplish entirely expected
27 results.” It is believed that it is not justified to draw this conclusion because the instant
28 specifications do not assert unexpected results. It is not appropriate for initial specifications
29 to assert unexpected results, which is a secondary consideration under *Graham v John Deere*.
30 Paragraph 716 of the MPEP addresses affidavits and declarations traversing rejections

1 pursuant to 37 CFR 1.132 and Paragraph 716.02 specifically addresses the content of Section
2 132 affidavits alleging unexpected results. The point being made is that the appropriate time
3 to allege unexpected results is after claims have been rejected and the appropriate manner is
4 in a Section 132 affidavit that satisfies the criterion of Paragraph 716.02 of the MPEP. Since
5 an allegation of unexpected results does not belong in the initial specifications, it is
6 unwarranted to draw conclusions from its absence.

7 Furthermore, substituting the reaction chamber of Wang with the vessel of Kieser et
8 al. for dissociating hydrocarbon fuel and H₂O does not use a known apparatus for its
9 intended use in a known environment to accomplish entirely known results. Wang's
10 invention is directed toward the thermal destruction of heavy-molecule volatile organic
11 compounds (VOCs) such as polychlorinated biphenyls (PCBs), (C1/L12-l23) which are
12 different from constituents of exhaust of mobile equipment. Thus, replacing the plasma
13 generating means of Wang with the plasma generating means of Kieser et al. device is more
14 than use of known apparatus for its intended use in a known environment to accomplish
15 entirely known results. Destroying heavy-molecule VOCs is not the intended use of Kieser
16 et al.'s and the mobile equipment exhaust environment is different from Wang's reactor
17 environment. Furthermore, the instant invention is directed not toward thermal destruction
18 of heavy-molecule VOCs nor toward exhaust detoxification, but rather toward dissociating
19 hydrocarbon fuel and water. The sooty environment in which their device operates is far
20 different from the environment in the reaction chamber of the instant invention with its
21 intense field of ions and electrons as well as full (100%) concentration of hydrocarbon fuel
22 and water. The difficulty of dissociating H₂O by thermal energy (rather than by expensive
23 electrolysis) is discussed in Paragraph [0008] of the instant application. There is no reason
24 to believe that the thermal dissociation of H₂O could be achieved in the reactor of Wang,
25 with or without substituting the plasma generating means of Kieser et al.

26 Paragraph 2141 of the *Manual of Patent Examining Procedures* (MPEP), pg 2100-
27 120 (May 2004) contains four basic tenets of patent law that must be adhered to when
28 considering obviousness rejections. The second tenet states "The references must suggest
29 the desirability and thus the obviousness of making the combination." The MPEP also states
30 on page 2100-131 (May 2004) that the mere fact that references can be combined does not

1 render the resultant combination obvious unless the prior art also suggests the desirability of
2 the combination. The Detailed Action contains no suggestion of the desirability of
3 substituting the plasma generating means Kieser et al for the plasma generating means of
4 Wang (156). It is believed, therefore, that the Section 103 rejection of Claims 1 and 12-13 is
5 contrary to this second tenet of suggested desirability of making the substitution. Therefore,
6 we believe that the rejection of independent Claim 1 under 35 U.S.C. 103 based on the
7 plasma generating means being obvious in view of Kieszer et al. is traversed.

8 The Detailed Action on page 6, characterizes Sakurai et al as teaching the use of a
9 compression-expansion cushion mat material (171) surrounding the ceramic insulator
10 material (173) as shown in their Fig. 17. Sakurai et al. discuss the embodiment shown in Fig.
11 17 at (C12/L44-54). The figure shows separate units of cushion members (171) and seal
12 members (172) that require cap (174) and holder (61) to accept external forces to perform
13 their function. The commercially available 3M Interam is a very flexible “one-piece” sheet
14 material that functions as the compression-expansion mat material that negates the need for
15 the cap and holder required by the invention taught by Sakurai et al. Because Sakurai et al
16 teachings need a seal member, a holder, and a cap (a functionality that is strongly dependent
17 on mechanical operation), they do not teach the “expansion-compression mat material” whose
18 functionality is strongly thermal or temperature-dependent. Neither does their disclosure
19 suggest it. Note that mat was added to Claim 1 to be consistent with the terminology of the
20 specifications) of Claim 1

21 Claim 1 as amended includes the limitation of an ion-neutralization filter surrounding
22 the collector electrode means. In Paragraph 10-7, page 8, the Detailed Action asserts that
23 Kieser et al. (C3/L38-46) disclose “an ion neutralizing filter surrounding the collector
24 electrode in the reactor chamber.” This paragraph referred to, discusses the dielectric, what
25 material can be used, and how it can be made. The last sentence in the paragraph makes
26 clear that a major purpose of the dielectrics is to achieve high capacitance allowing optimum
27 power supply. Nowhere does Kieser et al. refer to the dielectric layers as having a filtering
28 purpose. The dielectric layers taught by Kieser et al are only insulating material that have no
29 reaction or electric exchange with ions and electrons. Hence, ions and electrons can pass
30 through these layers. As stated in paragraph [0015] of the instant application, “The filter acts

1 to neutralize ions and to allow and passing of electrons to the collector electrodes while
2 slowing them down so that they impart less kinetic energy (heat) to the collector electrodes.
3 The filter also acts as a thermal radiation shield to cool the collector electrodes to improve
4 their effectiveness.” Because the dielectric layers of Kieser et al allow passage of both ions
5 and electrons, they are not ion-neutralization filters in the environment of the reaction
6 chamber in the instant invention. Therefore, we believe that Kieser et al does not teach or
7 suggest an ion-neutralization filter and consequently this limitation of independent Claim 1 is
8 not taught or suggested by the prior art cited in the Detailed Action. For this reason also
9 Claim 1 is not obvious in view of the prior art and its rejection under 35 U.S.C. 103 is
10 traversed..

11 Rejection of Claims 12 and 13. In Paragraph 13 of the Detailed Action, Claims 12
12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang (USP
13 5,614,156) in view of Kieser et al. (USP 5,746,051) and further in view of Sakurai et al.
14 (USP 5,744,104). Claims 12 and 13 are dependent on independent Claim 1. Paragraph
15 2143.03 of the MPEP, page 2100-133 (May 2004) provides that to establish *prima facie*
16 obviousness of a claimed invention, all the claim limitations must be taught or suggested by
17 the prior art. If an independent claim is nonobvious under 35 U.S.C., then any claim
18 dependent therefrom is nonobvious. As the rejection of independent Claim 1 under 35
19 U.S.C. 103 has been traversed, the rejections of Claims 12 and 13 are also traversed.

20 On page 7, the Detailed Action characterizes Wang (156) as disclosing “plural
21 electric circuits connected to plural electrical sources in regard to Claims 12 and 13. Wang
22 discloses (C4/L19-51) electric heating elements with the shape shown in Fig. 2 of that patent
23 in the reactor chamber. These electric heating sources form circuits with electric sources.
24 Wang does not disclose emitter electrodes and collector electrodes with electric circuits
25 between them. Rather, Wang merely discloses electric heating elements. Claim 12 is
26 dependent on Claim 1 and therefore includes the limitations of Claim 1, including emitter
27 electrodes and collector electrodes forming circuits, which is not taught nor suggested by
28 Wang (156)

29 As discussed under *Claim Rejection - 35 U.S.C. §103*, Claim 13 has been amended
30 for the sake of clarity. Also, as discussed under *Manner of Operating Apparatus*, Claims 1

1 and 13 have been amended to remove language related to the manner of operating the
2 disclosed reformer.

3

4 **Rejection of Claims 2-8 and 11**

5 In Paragraph 10-7 of the Detailed Action, Claims 2-8 and 11 are rejected under 35
6 U.S.C. 103(a) as being unpatentable over Wang (USP 5,614,156) in view of Kieser et al.
7 (USP 5,746,051) and further in view of Sakurai et al. (USP 5,744,104), applied to Claim 1,
8 and further in view of Tuck et al. (USP 6,097,139). It should be noted that this Response
9 adds Claim 18 which is dependent on Claim 1 and which adds the limitation found in
10 paragraph [0017] of a temperature range in the reaction chamber in the range of 400°C to
11 1900°C. Claims 2-8 are directly or indirectly dependent on Claim 18. Also Claim 5 has
12 been deleted because its limitations have been directly incorporated in Claim 1. Claims 2-4,
13 6-8, 11, and 18 are dependent on independent Claim 1. Paragraph 2143.03 of the MPEP,
14 page 2100-133 (May 2004) provides that to establish *prima facie* obviousness of a claimed
15 invention, all the claim limitations must be taught or suggested by the prior art. If an
16 independent claim is nonobvious under 35 U.S.C., then any claim dependent therefrom is
17 nonobvious. As the rejection of independent Claim 1 under 35 U.S.C. 103 has been
18 traversed, the rejections of Claims 2-4, 6-8, 11 and 18 are also traversed.

19 Claims 2-4 differ from Claim 1 in that details about the emitter electrode means are
20 given (“having a multiplicity of thin needle-like extrusions in Claim 2 and the needle-like
21 extrusions having diameters between 1 nanometer and 100 micrometers in Claim 3; and the
22 metals for the electrodes in Claim 4). On page 7, the Detailed Action identifies that Tuck et
23 al. teaches the use of emitting fibers with diameters in the range 0.5 micrometers to 100
24 micrometers, a range encompassing part of the range in Claim 3 of the instant application,
25 for applications that include plasma reactors. These fibers are similar to the needle-like
26 extrusions as to diameter and number. Tuck et al. teach fibers containing conducting
27 particles comprising silicon carbide, tantalum carbide, hafnium carbide, zirconium carbide,
28 the Magneli sub-oxides of titanium, semiconducting silicon, III-V compounds and II-VI
29 compounds (C4/L44-49). These particles may be coated or inked with a plurality of
30 insulating layers containing such materials as glass ceramics, ceramic, oxide ceramic, nitride,

1 boride, or diamond (C5/L1-29). Tuck et al. do not mention the operational temperature
2 range for their invention. However, one with ordinary skills in the art would know that this
3 type of “needle” would only survive at low temperature. Increases in operational
4 temperature degrades the material, changes its properties, and causes instability or
5 catastrophic failure. Claim 18 and the claims dependent on it have the limitation of an
6 operating temperature range of 400°C to 1900°C. As persons with ordinary skills in the art
7 would know of the shortcomings of using the “needles” of Tuck et al. at high temperatures, it
8 would not be obvious one with ordinary skills in the art to substitute the “needles” of Tuck et
9 al for the needles of the instant invention.

10 In Claim 4 (as amended), the electrode means, includes the needles, are identified as
11 “a metal selected from [[a]] the group consisting of tungsten, zirconium, titanium,
12 molybdenum, and alloys thereof.” However, Tuck et al does not teach the use of metals and
13 alloys at (C4/L44-49); rather they teach the use of particles made of oxides, carbides and
14 silicon compounds contained within . Metals and their alloys have significantly different
15 properties regarding their use as electrodes than carbides, oxides, and silicon compounds
16 have. On page 7, the Detailed Action says that Tuck et al. discloses electrodes made of these
17 materials. It also appears to say that it would be obvious to one having ordinary skills in the
18 art that substituting the emitter electrodes of Tuck et al for the electrodes in the instant
19 invention would improve performance by having increased thermal conductivity and thermal
20 stability. As discussed in the preceding paragraph thermal stability would be degraded by
21 using conducting particles imbedded in insulating layers. It is well known that metals have
22 higher thermal conductivity than the materials taught by Tuck et al. They do not teach the
23 use of the same materials as the instant invention and since persons with ordinary skills in
24 the art would likely know that the electrodes of Tuck et al would degrade thermal stability
25 and thermal conductivity of the electrodes, Tuck et al do not suggest the substitution of their
26 electrodes for the electrodes of the instant invention. Consequently, the Applicant believes
27 that his use of metal and metal alloy electrodes in Claim 4 is not rendered obvious by Tuck et
28 al teaching the use of carbide, oxide or silicon compound fibers.

29 Paragraph 10-7 finds limitations in Claims 2-8 and 11 that are directed to a manner of
30 operation. Such language was found in Claims 5 and 11 and addressed as was discussed

1 under the rubric of *Manner of Operating Apparatus*. Such language was not apparent in
2 Claims 2-4 and 6-8.

3

4 **Rejection of Claim 9**

5 Paragraph 10-9 of the Detailed Action, rejects Claim 9 under 35 U.S.C. 103(a) as
6 being unpatentable over Wang (USP 5,614,156) in view of Kieser et al. (USP 5,746,051) and
7 further in view of Sakurai et al. (USP 5,744,104), further in view of Tuck et al. (USP
8 6,097,139), as applied to Claim 8, and further in view of 3M Designer's Guide for Interam™
9 Catalytic Converter Mat Product. Claim 9 is dependent on independent Claim 1. Paragraph
10 2143.03 of the MPEP, page 2100-133 (May 2004) provides that to establish *prima facie*
11 obviousness of a claimed invention, all the claim limitations must be taught or suggested by
12 the prior art. If an independent claim is nonobvious under 35 U.S.C., then any claim
13 dependent therefrom is nonobvious. As the rejection of independent Claim 1 under 35
14 U.S.C. 103 has been traversed, the rejection Claim 9 is also traversed.

15 Paragraph 10-9 of the Detailed Action finds limitations in Claim 9 that are directed to
16 a manner of operation. Such language was discussed under the rubric of *Manner of*
17 *Operating Apparatus* and has been deleted in amended Claim 9.

18

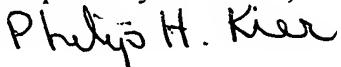
19 **Rejection of Claim 10**

20 Paragraph 10-10 of the Detailed Action, rejects Claim 10 under 35 U.S.C. 103(a) as
21 being unpatentable over Wang (USP 5,614,156) in view of Kieser et al. (USP 5,746,051) and
22 further in view of Sakurai et al. (USP 5,744,104), further in view of Tuck et al. (USP
23 6,097,139), as applied to Claim 5, and further in view of Naeem (USP 6,197,267). Claim 10
24 is dependent on independent Claim 1. Paragraph 2143.03 of the MPEP, page 2100-133
25 (May 2004) provides that to establish *prima facie* obviousness of a claimed invention, all the
26 claim limitations must be taught or suggested by the prior art. If an independent claim is
27 nonobvious under 35 U.S.C., then any claim dependent therefrom is nonobvious. As the
28 rejection of independent Claim 1 under 35 U.S.C. 103 has been traversed, the rejection Claim
29 10 is also traversed.

1 Naeem teaches the use of alumina and semiconductor (insulating) material as a
2 substrate, and over the substrate the use of a high-dielectric constant material required for its
3 catalytic reactions that are imbedded in a conductive film that is covered with a
4 nonconductive coating. This arrangement is described as lowering the voltage required to
5 reactor. This arrangement, which does not resemble the ion-neutralization filter of the
6 instant invention and Naeem does not suggest that it neutralizes ions. Naeem's teachings
7 are directed to a different structure for a different function. It would neither teach nor
8 suggest the ion-neutralization filter in Claim 10.

9 Paragraph 10-9 finds limitations in Claim 10 that are directed to a manner of
10 operation. Such language was discussed and addressed under the rubric of *Manner of*
11 *Operating Apparatus* by changing "ion neutralizing" to – ion-neutralization –.

12
13 Respectfully submitted,

14 

15 Philip H. Kier
16 Registration No. 28,866